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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,072	07/25/2003	Dale Spall	46280.0366	3044

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EXAMINER	
MOSS, KERI A	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
08/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/628,072	SPALL ET AL.	
	Examiner	Art Unit	
	KERI A. MOSS	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-19,21-25,51-57 and 59-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12-19,21-25 and 56* is/are allowed.

6)☒ Claim(s) *51-55,57 and 59-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Previous rejections have been maintained.

Claim Interpretation

2. Claim 51 claims a second molecular marker, the weight of which is artificially enhanced by a non-radioactive isotope. The Specification does not define "molecular marker." Based on a search in East, the Examiner has concluded that “molecular marker” commonly means a molecule that indicates the presence of a particular compound.

Claim Rejections - 35 USC § 103

3. Claims **51-54, 58-61** rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer (USP 6,312,958) in view of Anderson II (5,474,937) (hereinafter “Anderson ‘937”).

Meyer discloses a liquid marker and a method for marking a hydrocarbon liquid comprising adding a first marker having a molar absorptivity of approximately 5×10^4 L mole $^{-1}$ cm $^{-1}$ or greater in the wavelength range of about 600-1000 nm, for example squaraines, phthalocyanines or naphthalocyanines, (column 4 lines 18-25) and adding a second marker that is a molecular marker (column 3 lines 16-28). The markers are molecular markers because they are used to detect adulteration (column 3 lines 1-13). Meyer discloses a total concentration of markers at 1-2000 ppb (0.001-2 ppm), which reads on applicant’s claimed first marker concentration of between 1 ppb and 10 ppm (column 15 lines 29-34). The markers of Meyer are capable of being determined by a

handheld IR spectrometer as the markers emit fluorescent light in the near-IR range (abstract). Markers that fit within the desired range of Meyer, meaning within 600-1200 nm include alcohols such as ethanol or methanol; ethers such as dioxane; ketones such as acetone; and aliphatic or aromatic hydrocarbons such as octane, xylene (column 14 lines 55-67).

Meyer does not expressly teach *that the second* marker is 1) non-radioactive or 2) is enhanced by a deuterium atom.

Anderson '937 teaches using a chemical substance that is "a non-radioactive isotope of either a chemical element or an inorganic or organic compound" (column 1 lines 64-66). "Any element or compound which can be produced with stable isotopes not generally found in nature is suitable for the chemical substance" (column 4 lines 2-5). Anderson specifically teaches labeling molecular markers with a non-radioactive isotopic tracer such as deuterium (columns 3-4). Examples of molecular markers that Anderson teaches labeling with a non-radioactive isotope include solvents taught by Meyer as markers such as acetone, dioxane, ethanol, methanol, octane or xylene (column 4 lines 10-19). The amount of isotopic chemical substance used may be less than 1ppb for certain isotopic compounds and about 1-5 ppb for others (column 3 lines 38-43). Such labeling is cheap and obviously can be used as an additional labeling for molecular markers. The heavy atom may be in any position in the molecule of the chemical substance (column 4 lines 40-41). Having a variety of hydrogens in the molecule to which to substitute the deuterium creates a number of uniquely identifiable

combinations that thereby decrease the chance that more than one shipping vessel will contain the same non-radioactive isotope (column 4 lines 40-57).

Anderson '937 teaches that the advantage of the disclosed method is that any compound that can be produced with stable isotopes not generally found in nature may be deuterated (column 4 lines 1-5). Additional advantages to Anderson's molecular markers is that they are readily available, easy to make and non-radioactive. Thus, it would have been obvious for one of ordinary skill in the art to modify the reference of Meyer by deuterating at least one of the markers made up of the disclosed markers that can be produced with stable isotopes not generally found in nature in order to gain the advantages of readily available and easy to make markers that are more environmentally friendly.

4. Claim **55** is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer in view of Anderson '937, as applied to claims **51-54, 58-61** above, and further in view of Atkinson et al (USP 3,746,634).

5. Anderson '937 incorporates by reference the teachings of Atkinson for disclosing the method of deuterating compounds. Atkinson teaches a method of deuterating a cyclic hydrocarbon having at least 10 carbon atoms and a melting point no greater than 300 degrees celsius. Based on this teaching, one of ordinary skill in the art would deuterate any hydrocarbon meeting these conditions, including polynuclear aromatic hydrocarbons in order to obtain the predictable result of deuterating the compounds.

6. Claim **57** is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer in view of Anderson '937, as applied to claims **51-54, 58-61** above, and further in view of Atkinson et al (USP 3,746,634) as applied to claim 55, above and further in view of Anderson '283 (5,981,283).

Meyer, Anderson and Atkinson do not expressly teach that the second marker is one of the list of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. recited in claims 19 and 57. Anderson '283 patent teaches using such compounds as tagging agents for hydrocarbon fuels (column 6 lines 4-15). These tagging agents may be used to determine whether fuel has been adulterated (columns 2-3). They are compatible in small amounts with the intended use of the fuel and are soluble in the fuel in at least small amounts (column 5 lines 44-48). Thus, it would have been obvious for one of ordinary skill in the art to deuterate any of 1,2-diphenylbenzene, 1,4-diphenylbenze, triphenylmethane, etc. recited in claims 57 in order to obtain the predictable result of having a readily available, easy to make marker for labeling fuel.

Allowable Subject Matter

7. Claims 12-19, 21-25 and 56 are allowed.

Response to Arguments

8. Applicant's arguments filed June 27, 2008 have been fully considered but they are not persuasive.

9. Applicants argue that Meyer teaches markable liquids, not markers. Regardless of the terms that Meyer used, the markable liquids read on what applicants call markers. Applicants' markers are alcohols, ethers, ketones and aliphatic or aromatic hydrocarbons and these are the same compounds Meyer calls markable liquids (see instant claim 60). These compounds inherently have the same qualities whether they are called markable liquids or markers. Thus, Meyer's markable liquids read on applicants claimed markers.

10. Applicants' arguments regarding the method of determining the electronic transitions have no relevance to the claim language as applicants are claiming a compound.

11. Applicant argues that the markers of Anderson do not undergo electronic transitions in the spectral region described by Meyer, but has provided no evidence to support that support this assertion. Attorney arguments do not take the place of evidence. MPEP 716.01 (b).

12. Regarding claims 55 and 57, Applicant argues that Atkinson "deuterating a polynuclear aromatic hydrocarbon yields a saturated hydrocarbon." Regardless of the terms used, the compounds of Atkinson and of the instantly claimed invention are the same. While Applicants label them deuterated polynuclear aromatic hydrocarbon, Atkinson labels them saturated hydrocarbons. Both are deuterated polynuclear aromatic hydrocarbons.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KERI A. MOSS whose telephone number is (571)272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Keri A. Moss/
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797